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DATA BRIEF

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CONTIN

For 1993, Doctoral Scientists & Engineers Report 1.6 Percent Unemployment Rate But 4.3 Percent *Under*employment

by R. Keith Wilkinson

The low rates of unemployment among doctoral S&Es do not necessarily mean that they are all fully employed at work of their own choosing.

Information in this Data Brief is from the 1993 Survey of Doctorate Recipients, conducted by the National Research Council for the National Science Foundation. These pages report on the 1993 employment status of scientists and engineers (S&Es) who have earned doctoral degrees from U.S. universities and colleges.

In 1993 there were a little over half a million doctoral S&Es in the United States. Slightly less than one-tenth (8.4 percent) were "not in the labor force," i.e., not employed and not seeking employment. These S&Es would include, among others, retirees below the age of 76 and persons staying at home for family reasons. Employment status of doctoral scientists and engineers in 1993 is shown below:

Total S&Es	513,460
In labor force	470,500
Working for pay or profit	462,870
Unemployment rate	1.6 %
Underemployment rate	4.3 %

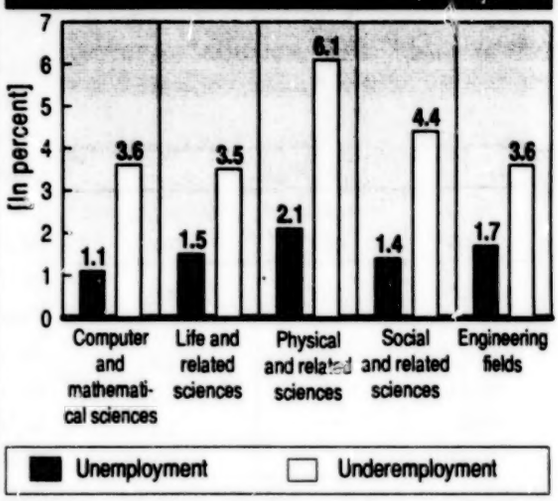
Unemployment

Of those doctoral S&Es available for work in 1993, 98.4 percent were employed, meaning that the unemployment rate for doctoral S&Es in 1993 was 1.6 percent. This rate compares with a 1993 unemployment rate for the total U.S. labor force of nearly 7 percent.

Variations in rates of unemployment by broad field of doctorate are detectable, but the differences are small. (See chart 1.)

The highest rates of unemployment among scientific disciplines are for geology and oceanography (3.0 percent) and physics and astronomy (2.3 percent). Among engineering fields, holders of doctorates in industrial engineering exhibit the highest unemployment rate (2.9 percent). On the other hand, mechanical and civil engineers have unemployment rates of only 1.0 and 0.6 percent respectively.

Chart 1. Employment status of doctoral scientists and engineers, by broad field: 1993



SOURCE: NSF/SRS, 1993 Survey of Doctorate Recipients

Underemployment

These low unemployment rates among doctoral S&Es do not necessarily mean that those workers are all fully employed at work of their own choosing. A rough measure of this phenomenon is provided by the S&E *under*employment rate. This rate shows the ratio to total employment of those who are working part-time but are seeking full-time jobs or who are working in a field outside their doctoral degree field because a job in their doctoral degree field was not available.

The overall S&E underemployment rate stood at 4.3 percent in 1993. Again, variations by field are apparent, with the physical science doctorates showing the highest rate (6.1 percent) of underemployment and the life

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scientists the lowest (3.5 percent). These numbers tend to support the widespread anecdotal discussions of employment problems among doctoral physicists and geoscientists, but they also put the problems into a perspective of overall employment and underemployment rates.

Employment Status of Young S&Es

A closer look at the employment status of doctoral S&Es by the number of years since they earned their degrees sheds light on the issue of employment problems of young S&Es.

Table 1. 1993 Employment status of doctoral scientists and engineers, by year of graduation

[In percent]

Year of doctorate	Unemployment rate	Underemployment rate
1991-92	2.0	4.5
1985-90	1.4	3.1
1980-84	1.5	4.6
1970-79	1.5	5.6
1960-69	1.7	3.4
Pre-1960	*	*

KEY: * = (n) too small

SOURCE: NSF/SRS, 1993 Survey of Doctorate Recipients

Recent Ph.D. graduates are the most likely to be unemployed — 2.0 percent unemployment across all fields. But this rate drops sharply to 1.4 percent for those who are from 3 to 8 years beyond their graduation. Unemployment rates during the working life of most S&Es remain below the level of unemployment for new graduates. Underemployment, however, does rise to higher levels than for new graduates among those who have held their degrees more than 10 years.

Employment and Gender

Female S&E doctorate holders (78.2 percent) are slightly less likely than their male counterparts (85.9 percent) to be employed full-time but much more likely to be employed part-time (men: 4.1 percent, women: 12.4 percent). Nearly identical percentages of men (1.5 percent) and women (1.6 percent) reported themselves as "unemployed but seeking employment." Men (7.6 percent) were much more likely than women (3.3 percent) to be retired, but women (4.4 percent) were much more likely than men (0.9 percent) to be "not employed, not seeking employment."

Employment and Racial and Ethnic Identity

Doctorate holders from racial and ethnic minorities are more likely to be employed full-time than their white counterparts: 88.2 percent for Native Americans, 90.6 percent for blacks, and 91.4 percent for Asians and Pacific Islanders, versus 83.3 percent for whites. Minority group doctorate holders are less likely than whites to be employed part-time, and much less likely to be retired but are somewhat more likely to be unemployed but seeking employment.

Because of changes in survey methodology, the employment data for 1993 are not directly comparable with available data for prior years.

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